What is claimed is:

1. A method for concealing the effects of frame errors in frames to be decoded by a decoder in providing synthesized speech, the frames being provided over a communication channel to the decoder, each frame providing parameters used by the decoder in synthesizing speech, the method comprising the steps of:

a) determining whether a frame is a bad frame; and

b) providing a substitution for the parameters of the bad frame based on an at least partly adaptive mean of the spectral parameters of a predetermined number of the most recently received good frames.

2. A method as in claim 1, further comprising the step of determining whether the bad frame conveys stationary or non-stationary speech, and wherein the step of providing a substitution for the bad frame is performed in a way that depends on whether the bad frame conveys stationary or non-stationary speech.

3. A method as in claim 2, wherein in case of a bad frame conveying stationary speech, the step of providing a substitution for the bad frame is performed using a mean of parameters of a predetermined number of the most recently received good frames.

4. A method as in claim 3, wherein in case of a bad frame conveying stationary speech and in case a linear prediction (LP) filter is being used, the step of providing a substitution for the bad frame is performed according to the algorithm:

For i = 0 to N-1:

adaptive_mean_LSF_vector(i)
=(past_LSF_good(i)(0)+past_LSF_good(i)(1)+…+past_LSF_good(i)(K-1))/K;

LSF_q1(i)
*=α*past_LSF_qood(i)(0)+(1-α)*adaptive_mean_LSF(i);*

LSF_q2(i)=LSF_q1(i);

wherein α is a predetermined parameter, wherein N is the order of the LP filter, wherein K is the adaptation length, wherein *LSF_q1(i)* is the quantized LSF vector of the second subframe and *LSF_q2(i)* is the quantized LSF vector of the fourth subframe, wherein *past_LSF_qood(i)(0)* is equal to the value of the quantity *LSF_q2(i-1)* from the previous good frame, wherein *past_LSF_good(i)(n)* is a component of the vector of LSF parameters from the $n+1^{th}$ previous good frame, and wherein *adaptive_mean_LSF(i)* is the mean of the previous good LSF vectors.

5. A method as in claim 2, wherein in case of a bad frame conveying non-stationary speech, the step of providing a substitution for the bad frame is performed using at most a predetermined portion of a mean of parameters of a predetermined number of the most recently received good frames.

6. A method as in claim 2, wherein in case of a bad frame conveying non-stationary speech and in case a linear prediction (LP) filter is being used, the step of providing a substitution for the bad frame is performed according to the algorithm:

For i = 0 to N-1:

partly_adaptive_mean_LSF(i)
*= β*mean_LSF(i) + (1-β)*adaptive_mean_LSF(i);*

LSF_q1(i)
*= α*past_LSF_qood(i)(0)+(1-α)*partly_adaptive_mean_LSF(i);*

LSF_q2(i)= LSF_q1(i);

wherein N is the order of the LP filter, wherein α and β are predetermined parameters, *wherein LSF_q1(i)* is the quantized LSF vector of the second subframe and *LSF_q2(i)* is the quantized LSF vector of the fourth subframe, wherein *past_LSF_q(i)* is the value of *LSF_q2(i)* from the previous good frame, wherein *partly_adaptive_mean_LSF(i)* is a combination of the adaptive mean LSF vector and the average LSF vector, wherein *adaptive_mean_LSF(i)* is the mean of the last K good LSF vectors, and wherein *mean_LSF(i)* is a constant average LSF.

7. A method as in claim 1, further comprising the step of determining whether the bad frame meets a predetermined criterion, and if so, using the bad frame instead of substituting for the bad frame.

8. A method as in claim 7, wherein the predetermined criterion involves making one or more of four comparisons: an inter-frame comparison, an intra-frame comparison, a two-point comparison, and a single-point comparison.

9. A method for concealing the effects of frame errors in frames to be decoded by a decoder in providing synthesized speech, the frames being provided over a communication channel to the decoder, each frame providing parameters used by the decoder in synthesizing speech the method comprising the steps of:

a) determining whether a frame is a bad frame; and

b) providing a substitution for the parameters of the bad frame, a substitution in which past immittance spectral frequencies (ISFs) are shifted towards a partly adaptive mean given by:

$$ISF_q(i) = \alpha * past\_ISF_q(i) + (1-\alpha) * ISF_{mean}(i), \text{ for } i = 0..16,$$

where

$\alpha = 0.9$,

$ISF_q(i)$ is the i[th] component of the ISF vector for a current frame,

$past\_ISF_q(i)$ is the i[th] component of the ISF vector from the previous frame,

$ISF_{mean}(i)$ is the i[th] component of the vector that is a combination of the adaptive mean and the constant predetermined mean ISF vectors, and is calculated using the formula:

$$ISF_{mean}(i) = \beta * ISF_{const\_mean}(i) + (1-\beta) * ISF_{adaptive\_mean}(i), \text{ for } i = 0..16,$$

where $\beta = 0.75$, where $ISF_{adaptive\_mean}(i) = \frac{1}{3}\sum_{i=0}^{2} past\_ISF_q(i)$ and is updated whenever BFI =0 where BFI is a bad frame indicator, and where $ISF_{const\_mean}(i)$ is the i[th] component of a vector formed from a long-time average of ISF vectors.

10. An apparatus for concealing the effects of frame errors in frames to be decoded by a decoder in providing synthesized speech, the frames being provided over a communication channel to the decoder, each frame providing parameters used by the decoder in synthesizing speech, the apparatus comprising:

a) means for determining whether a frame is a bad frame; and

b) means for providing a substitution for the parameters of the bad frame based on an at least partly adaptive mean of the spectral parameters of a predetermined number of the most recently received good frames.

11. An apparatus as in claim 10, further comprising means for determining whether the bad frame conveys stationary or non-stationary speech, and wherein the means for providing a substitution for the bad frame performs the substitution in a way that depends on whether the bad frame conveys stationary or non-stationary speech.

12. An apparatus as in claim 11, wherein in case of a bad frame conveying stationary speech, the means for providing a substitution for the bad frame does so using a mean of parameters of a predetermined number of the most recently received good frames.

13. An apparatus as in claim 12, wherein in case of a bad frame conveying stationary speech and in case a linear prediction (LP) filter is being used, the means for providing a substitution for the bad frame is operative according to the algorithm:

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For i = 0 to N-1:
  adaptive_mean_LSF_vector(i)
    =(past_LSF_good(i)(0)+past_LSF_good(i)(1)+...+past_LSF_good(i)(K-1))/K;
  LSF_q1(i)
    =α*past_LSF_qood(i)(0)+(1-α)*adaptive_mean_LSF(i);
  LSF_q2(i)=LSF_q1(i);
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wherein α is a predetermined parameter, wherein *N* is the order of the LP filter, wherein *K* is the adaptation length, wherein *LSF_q1(i)* is the quantized LSF vector of the second subframe and *LSF_q2(i)* is the quantized LSF vector of the fourth subframe, wherein *past_LSF_qood(i)(0)* is equal to the value of the quantity *LSF_q2(i-1)* from the previous good frame, wherein *past_LSF_good(i)(n)* is a component of the vector of LSF

parameters from the $n+1^{th}$ previous good frame, and wherein *adaptive_mean_LSF(i)* is the mean of the previous good LSF vectors.

14. An apparatus as in claim 11, wherein in case of a bad frame conveying non-stationary speech, the means for providing a substitution for the bad frame does so using at most a predetermined portion of a mean of parameters of a predetermined number of the most recently received good frames.

15. An apparatus as in claim 11, wherein in case of a bad frame conveying non-stationary speech and in case a linear prediction (LP) filter is being used, the means for providing a substitution for the bad frame is operative according to the algorithm:

For i = 0 to N-1:

$$partly\_adaptive\_mean\_LSF(i) = \beta * mean\_LSF(i) + (1-\beta) * adaptive\_mean\_LSF(i);$$

$$LSF\_q1(i) = \alpha * past\_LSF\_good(i)(0) + (1-\alpha) * partly\_adaptive\_mean\_LSF(i);$$

$$LSF\_q2(i) = LSF\_q1(i);$$

wherein N is the order of the LP filter, wherein α and β are predetermined parameters, *wherein LSF_q1(i)* is the quantized LSF vector of the second subframe and *LSF_q2(i)* is the quantized LSF vector of the fourth subframe, wherein *past_LSF_q(i)* is the value of *LSF_q2(i)* from the previous good frame, wherein *partly_adaptive_mean_LSF(i)* is a combination of the adaptive mean LSF vector and the average LSF vector, wherein *adaptive_mean_LSF(i)* is the mean of the last *K* good LSF vectors, and wherein *mean_LSF(i)* is a constant average LSF.

16. An apparatus as in claim 10, further comprising means for

determining whether the bad frame meets a predetermined criterion, and if so, using the bad frame instead of substituting for the bad frame.

17. An apparatus as in claim 16, wherein the predetermined criterion involves making one or more of four comparisons: an inter-frame comparison, an intra-frame comparison, a two-point comparison, and a single-point comparison.

18. An apparatus for concealing the effects of frame errors in frames to be decoded by a decoder in providing synthesized speech, the frames being provided over a communication channel to the decoder, each frame providing parameters used by the decoder in synthesizing speech the apparatus comprising:

a) means for determining whether a frame is a bad frame; and

b) means for providing a substitution for the parameters of the bad frame, a substitution in which past immittance spectral frequencies (ISFs) are shifted towards a partly adaptive mean given by:

$$ISF_q(i) = \alpha * past\_ISF_q(i) + (1-\alpha) * ISF_{mean}(i), \text{ for } i = 0..16,$$

where

α = 0.9,

$ISF_q(i)$ is the i[th] component of the ISF vector for a current frame,

$past\_ISF_q(i)$ is the i[th] component of the ISF vector from the previous frame,

$ISF_{mean}(i)$ is the i[th] component of the vector that is a combination of the adaptive mean and the constant

predetermined mean ISF vectors, and is calculated using the formula:

$$ISF_{mean}(i) = \beta * ISF_{const\_mean}(i) + (1-\beta) * ISF_{adaptive\_mean}(i)\text{ , for } i = 0..16\text{ ,}$$

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where β = 0.75, where $ISF_{adaptive\_mean}(i) = \frac{1}{3}\sum_{i=0}^{2} past\_ISF_q(i)$ and is updated whenever BFI =0 where BFI is a bad frame indicator, and where $ISF_{const\_mean}(i)$ is the ith component of a vector formed from a long-time average of ISF vectors.